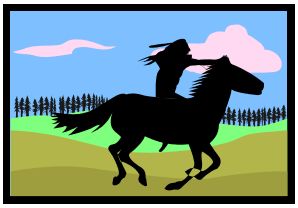
# AUDIT02

***Diabetes Care and Outcomes Chart Audit for Quality Assurance and Quality Improvement***

## *Contents*




**IHS Diabetes Program**


**March, 2002**

# Preface

Welcome to AUDIT02! If you are already familiar with the IHS Diabetes Chart Audit process, read the information below for a brief summary of this year's changes followed on the next page by quick-start directions. More detailed instructions for any of the steps are available on the pages referred to in parentheses.

> If you have not previously participated in the annual Diabetes Audit, **please** take time to read carefully through Sections 1-9 before beginning your audit activities.

**What's new in AUDIT02?**

- **New items**

  No new elements have been added to the audit this year. The items and format remain identical to the FY 2001 audit.

- **Exclusion Criteria**

  Patients with no visits to the health facility within the past 12 months are excluded from review (see page 7).

- **Modification of Reports**

  The audit summary report and renal preservation reports have been modified to reflect the lower BP cutpoint (130/80) for acceptable blood pressure control, consistent with the *IHS Standards of Care for Patients with Type 2 Diabetes*.

- **A Note on Epi Info**

  Epi Info 2000, the Windows version of Epi Info, is now available. HOWEVER, for the FY 2002 diabetes chart audit, we will continue to use the most recent DOS versions of Epi Info (6.04c or 6.04d). Epi Info 2000 has many nice features. It also is more complex, requires a faster computer, takes up more space (the install program uses the equivalent of 27 diskettes instead of 3), and as this document goes to press, it still lacks a report generator. At present there are an insufficient number of individuals trained in the new program to provide adequate technical support. You are welcome, and encouraged, to download Epi Info 2000 and begin to learn its features, but keep in mind that the AUDIT02 files were written for the DOS version of Epi Info, and they are not entirely compatible with the Windows version.

## Quick Start Directions:

1. Check with your Area Diabetes Consultant to see if an Area-wide Local Option Question has been developed. If a local option question will be used, print it onto the audit form (refer to pg 12).

2. Select in random fashion the appropriate number of charts to review (pg 6-8).

3. **Review the audit form, definitions and criteria with all chart reviewers (pg 9-11).**

4. Perform the chart audit.

*If a PC is available to you, you may proceed through the following steps.*

Confirm that your computer has an upgraded version of Epi Info (i.e., version 6.04c or 6.04d) that permits entry of dates with 4 digit years. If necessary, refer to Appendix D – Upgrading Epi Info.

5. Load the files from the AUDIT02 package into the computer subdirectory that contains Epi Info, usually C:\EPI6 (pg 15, step 1).

6. Enter the audit data into the AUDIT02.REC file, by going to Epi Info's E**N**TER Program and typing in **AUDIT02** when prompted for the name of the data (.REC) file (pg 15, step 4).

7. If a Local Option question was used, modify the report file to correctly display the results. This is done by making changes to the AUDIT02.RPT file (pg 13, bottom half).

8. Print out a summary report by entering Epi's **A**NALYSIS program, typing **READ AUDIT02**, pressing **<F5>**to send the report to your printer, and then typing **RUN AUDIT02** (pg 16, section 13).

9. Supplemental Renal Preservation and Cardiovascular Disease Reports can be printed in a similar fashion: begin at Epi's main menu, enter the **A**NALYSIS program, type **READ AUDIT02**, press **<F5>** to send the report to your printer, then type **RUN RENAL02** (pg 17, section 14).

10. Forward a copy of your data file (.REC file) to your Area diabetes consultant.

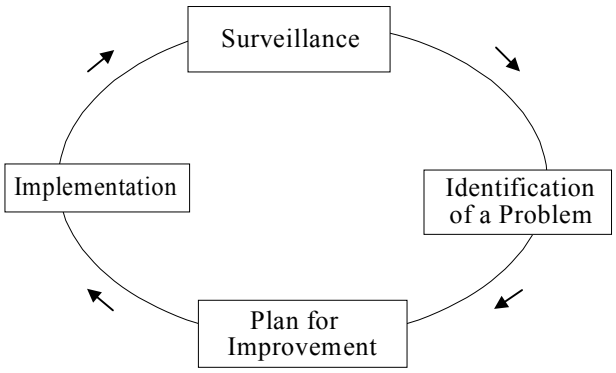
# Instructions for the IHS Diabetes Care and Outcomes Chart Audit 2002

## 1. INTRODUCTION

The instructions that follow describe a standardized method for assessing the diabetes care and the health status of diabetes patients at your facility. Using a uniform process and standardized definitions provides consistency as you monitor patient care patterns over time. It allows valid comparison of your facility with other IHS, tribal and urban facilities. During the chart audit, diabetes care is compared to the *IHS Standards of Care for Patients with Type 2 Diabetes* (see Appendix B). Instructions for sample size calculations, selecting charts for the audit, and standard definitions for each item are given on the next few pages. Additional assistance, if necessary, can be obtained from your Area Diabetes Consultant.

## 2. CHART AUDITS FOR QUALITY ASSESSMENT AND IMPROVEMENT ACTIVITIES

For any facility to provide quality diabetes care, on-going self-assessment and improvement activities are necessary. A number of techniques or methods to pursue improvement may be employed. A central feature of each of these systems is some form of an improvement cycle:




With respect to diabetes, the basic questions to be answered are straightforward: "Are we doing those things that we agreed were important for maximizing the health of our patients with diabetes?" and "Are there ways that we could do better?" Getting accurate and reliable answers is more complex, of course, but the diabetes audit program is designed to make it easier to do just that.

The IHS Diabetes Program recommends annual or more frequent medical record review to monitor care patterns and changes over time at your facility. You should select in a random manner a large enough sample of medical records so that you can be reasonably certain that observed changes are significant and not just due to chance (see sections 4 and 5). All of the indicators on the audit form, which reflect compliance with the *Standards of Care for Patients with Type 2 Diabetes*, should be completed as outlined in section 6.

The staff at your facility may be asked to participate in the audit process. While this process may seem tedious at first, many providers have found that participating in the chart audit provides a review of the standards of care for diabetes and identifies trends in diabetes care at their facility. Through the audit, the providers often have a better idea of what changes they can make to improve the outcome for people who suffer from this potentially devastating disease.

Once the chart audit is complete, the data may be entered into the Epi Info program, from which you can easily print a summary report. The report shows the percentage of charts having documentation of compliance with each of the indicators. Your Area Diabetes Consultant can assist you in obtaining reports and comparison data. In addition, your Area Diabetes Consultant can assist you in identifying program strengths and deficiencies. Facilities are encouraged to review the recommendations in a team setting, establish priorities together, and develop an action plan with a timetable for re-evaluation.

## 3. ADAPTING THE DIABETES CHART AUDIT TO MEET JCAHO/AAAHC REQUIREMENTS

The health care environment continues to evolve, both within and outside of IHS. In keeping with recent changes, both Joint Commission on Accreditation of Healthcare Organizations (JCAHO) and Accreditation Association for Ambulatory Health Care (AAAHC) emphasize patient centered, performance-based evaluations. Health centers are asked to demonstrate the efficacy and appropriateness of the care they provide. JCAHO and AAAHC both seek to determine whether a health facility is actually carrying out those functions that reasonably can be expected to improve the health of the patients they serve.

If JCAHO or AAAHC accreditation is important to your facility, you will be pleased to find that the diabetes audit process described here can serve as an excellent example of the type of performance oriented clinical self-assessment and improvement activity that both of these organization require. The diabetes audit is based on consensus-derived standards of care. These standards are reviewed regularly and then widely disseminated. The audit looks at your facility's actual performance on a number of key processes that are known to (or considered likely to) improve the health of people with diabetes. Outcome measures, such as blood pressure control and glycemic control, are also monitored. Because the diabetes audit is designed to be performed on a regular basis, it can be extremely useful in documenting performance trends that JCAHO or AAAHC find of interest. Additionally, when the diabetes audit results are routinely incorporated into multidisciplinary diabetes care planning activities, they provide a clear illustration of interdepartmental coordination to improve patient care.

**Table 1 - Sample Size Calculations** (see next page for explanation)

Sample size needed to be 90% or 95% certain that the rate you find is within 10% or within 5% of the true rate, for populations up to 2000.

| **Population** | 90% Certainty | | 95% Certainty | |
|---|---|---|---|---|
| (# of **DM** Patients) | Within **10%** | Within **5%** | Within **10%** | Within **5%** |
| <30 | all | all | all | all |
| 30 | 21 | 27 | 23 | 28 |
| 40 | 25 | 35 | 28 | 36 |
| 50 | 29 | 42 | 33 | 44 |
| 60 | 32 | 49 | 37 | 52 |
| 70 | 34 | 56 | 40 | 59 |
| 80 | 37 | 62 | 44 | 66 |
| 90 | 39 | 68 | 46 | 73 |
| 100 | 40 | 73 | 49 | 79 |
| 110 | 42 | 78 | 51 | 86 |
| 120 | 43 | 83 | 53 | 91 |
| 130 | 44 | 88 | 55 | 97 |
| 140 | 46 | 92 | 57 | 103 |
| 150 | 47 | 96 | 59 | 108 |
| 160 | 48 | 101 | 60 | 113 |
| 170 | 48 | 104 | 61 | 118 |
| 180 | 49 | 108 | 63 | 123 |
| 190 | 50 | 112 | 64 | 127 |
| 200 | 51 | 115 | 65 | 132 |
| 220 | 52 | 121 | 67 | 140 |
| 240 | 53 | 127 | 69 | 148 |
| 260 | 54 | 133 | 70 | 155 |
| 280 | 54 | 138 | 72 | 162 |
| 300 | 55 | 142 | 73 | 168 |
| 320 | 56 | 147 | 74 | 175 |
| 340 | 56 | 151 | 75 | 180 |
| 360 | 57 | 154 | 76 | 186 |
| 380 | 57 | 158 | 77 | 191 |
| 400 | 58 | 161 | 77 | 196 |
| 420 | 58 | 165 | 78 | 201 |
| 440 | 59 | 168 | 79 | 205 |
| 460 | 59 | 170 | 79 | 209 |
| 480 | 59 | 173 | 80 | 213 |
| 500 | 60 | 176 | 81 | 217 |
| 525 | 60 | 179 | 81 | 222 |
| 550 | 60 | 181 | 82 | 226 |
| 575 | 61 | 184 | 82 | 230 |
| 600 | 61 | 186 | 83 | 234 |
| 650 | 61 | 191 | 84 | 241 |
| 700 | 62 | 195 | 84 | 248 |
| 750 | 62 | 199 | 85 | 254 |
| 800 | 62 | 199 | 86 | 260 |
| 900 | 62 | 202 | 87 | 269 |
| 1000 | 63 | 208 | 88 | 278 |
| 2000 | 65 | 213 | 92 | 322 |

▲

**Minimum**
Number of Charts
Recommended

## 4. SAMPLE SIZE CALCULATIONS

The number of charts you will need to select depends on the number of active patients in your diabetes register.

Table 1 on the previous page outlines the minimum number of charts you will need to audit to be reasonably sure (90% confident) that a 10% difference noted from a previous or subsequent audit is a real change and not just due to chance. If, for example, your facility has 1000 active patients with diabetes, you will need to audit a total of 63 charts (see Table 1).

The diabetes register will often include people who are not considered active patients of the clinic and thus do not need to be audited. These charts should be identified early in the audit process and excluded. Table 2 outlines the charts which are to be included and excluded.

**Table 2 Patients to Include and Exclude in the Chart Audit**

**Include patients who:**

- Attend regular clinics or diabetes clinics.
- Refuse care or have special motivational problems (e.g., alcoholism).
- Are not attending clinic, but you do not know if they have moved or have found another source of care.

**Exclude patients who:**

- Have not had at least one visit during the past 12 months.
- Receive primarily referral or contract care, paid by IHS.
- Have arranged other MD care, paid with non-IHS monies.
- Receive their primary care at another IHS or Tribal health facility.
- Live in a jail, and receive care there.
- Live in a nursing home, and receive care there.
- Attend a dialysis unit (if on-site dialysis not available).
- Have gestational diabetes.
- Have impaired glucose tolerance (IFG or IGT) only.
- Have moved -- permanently or temporarily (should be documented)
- You are unable to contact, defined as 3 tries in 12 months (should be documented in the chart).
- Have died.

Keep in mind that unless your diabetes register is frequently updated, up to 10% of the people in the diabetes registry may not qualify to be included in the audit. To make sure you have an adequate sample at the end of the audit, **increase the chart sample by at least 10%.** In the example of 63 charts used above, this would mean an additional 6 charts, or a total of 69, would need to be pulled for the audit.

## 5. CHART SELECTION

The systematic random sampling technique will provide the best representative sample for audit. This is done in the following fashion: Suppose you need to select 69 charts from a registry list of 1000 patients. First, divide 1000 by 69, which yields the number 14.4. You now know that you must select one chart out of fourteen. However, don't automatically start with the first person. Use any method of random chance to determine which one of the first 14 people on the list should be selected. Use your imagination .... Number 14 pieces of paper with 1 through 14 and have someone draw one, or simply ask someone to pick a number between 1 and 14. Then use that number to select your first name for chart audit. Proceed through the entire list, selecting every 14th person on the list. **Please note that it is important to track down the charts which are missing from Medical Records as these are likely to belong to patients who have been seen recently and have high compliance with the Standards of Care.**

## 6. COMPLETING THE AUDIT FORM

Using the instructions that follow, review the medical record to see if each of the indicators are satisfied. If you cannot find a result in the chart, then *for the purposes of the audit*, apply the old dictum,

> "If it is not documented, it did not happen."

**Finally, please remember that all medical records are confidential documents and need to be handled accordingly.**

## 7. QUALITY ASSESSMENT OF DIABETES CARE, FY2002 ITEM DESCRIPTION

For the purposes of this audit, a **VISIT** is defined as any *primary care* visit, including ER and walk-in clinics. Do not include dental, eye care, patient education, surgery clinics, etc.

DEMOGRAPHIC DATA

**AUDIT DATE, CHART NUMBER, DATE OF BIRTH, SEX:** Self-explanatory.

**FACILITY NAME:** Enter your facility's name or abbreviation.

**AREA, SERVICE UNIT and FACILITY codes:** use the 2-digit official IHS codes ("ASUFAC" codes). Contact your Area diabetes consultant if you are unsure about your correct ASUFAC numbers.

**TRIBAL AFFILIATION:** Enter the 3 digit Tribal code

**COMMUNITY**: Enter the 7 digit code for the patient's community of residence.

**# OF PTS IN DIABETES REGISTRY:** Enter the number of active patients in your diabetes register. If your service unit has multiple facilities participating in the audit, make sure you use the correct sample size (number of active DM patients) for each component.

[This is a v**ery important item!** Please take care to assure accuracy.]

**DATE of Diabetes Diagnosis:** If only the year of diagnosis is stated, enter "07/01" of that year. If only the month and year are stated, enter the 15th of that month. Leave blank if date is unknown.

**TYPE of Diabetes:** Specify if the patient has (1) Type 1 (a.k.a. IDDM, juvenile onset diabetes), or (2) Type 2 (a.k.a. NIDDM, adult-onset diabetes). Keep in mind that not all insulin-using patients have type 1 diabetes – in fact, most of them have type 2 diabetes. If uncertain, mark as (2) Type 2.

**TOBACCO USE:** Current status of tobacco use (cigarettes, chewing tobacco, snuff, etc) taken from the health summary, problem list or flow sheet. Mark (1) Currently uses tobacco, (2) Does not currently use tobacco, or (3) Tobacco use undocumented.

**Referred for cessation counseling?** [to be completed *only* if currently uses tobacco]. (1) Yes, if provider documents cessation counseling or referral for cessation counseling during the past 12 mo, (2) No, if no cessation counseling in past year, or (3) Refused, if documented that patient declines/refuses cessation counseling efforts.

VITAL STATISTICS

**HEIGHT:** Enter height in inches, or in feet and inches.

**LAST RECORDED WT:** Record in pounds. If pregnant, use last non-pregnant weight. A note to re-confirm the value appears during data entry if an adult weight is <60 lbs or >600 lbs.

**HTN documented (DX or RX):** (1) Yes, hypertension diagnosis is on the problem list or visit assessment, or medication for hypertension is prescribed. (2) No documented hypertension diagnosis or meds.

**Last 3 BLOOD PRESSURES:** Record the last 3 blood pressures **obtained within the last year.** If a value falls outside of the expected range (e.g., >240 systolic or >140 diastolic) it will not be accepted; a cautionary note to confirm the level appears if systolic BP is >210 or diastolic BP is >130.

EXAMINATIONS (in past year)

**FOOT EXAM:** Exam must include evaluation of sensation and vascular status.
**EYE EXAM:** Exam must include a dilated eye exam or fundus photograph.
**DENTAL EXAM:** Must include examination of the gingiva and mucosal surfaces. Dental records may be kept separate from medical records at your facility.

EDUCATION in past year From flow sheets, progress notes, PHN referral or consults.

**DIET INSTRUCTION:** Note any mention of diet instruction in the past year and code by provider type: (1) Registered dietitian, (2) Non-R.D., (3) Both, or (4) None. If it is documented that pt. refused diet counseling, select (5) Refused.

**EXERCISE INSTRUCTION:** Note any mention of exercise instruction in the past year.

**Any GENERAL DM EDUCATION*:*** Note any recorded patient education in the past year on any topic(s) related to diabetes, **other than diet or exercise.**

TREATMENT (at time of audit)

**DM THERAPY:** Current treatment consists of (select as many as apply):

(1) Diet & Exercise *Alone*

(2) Insulin (all forms, including lispro (*Humalog*) and glargine (*Lantus*) insulin)

(3) Sulfonylureas, including the following:

| | | | |
|---|---|---|---|
| Tolazamide | (*Tolinase*) | Glyburide | (*DiaBeta, Micronase, Glynase*) |
| Tolbutamide | (generic) | Glipizide | (*Glucotrol, Glucotrol XL*) |
| Chlorpropamide | (*Diabinese*) | Glimepiride | (*Amaryl*) |

Also included in this category, for purposes of the audit:

| | | | |
|---|---|---|---|
| Repaglinide | (*Prandin*) | Nateglinide | (*Starlix*) |

(4) Metformin (*Glucophage*)
Note: Select choices 3 and 4 for *Glucovance* (glyburide + metformin)

(5) Acarbose (*Precose*) or miglitol (*Glyset*)

(6) Glitazones, including pioglitazone (*Actos*) or rosiglitazone (*Avandia*)

(9) Refuses therapy, or unknown.

**ACE INHIBITOR/ARB* use:** (1) Currently uses (is prescribed) an ACE inhibitor, (2) does not currently use an ACE inhibitor, or (3) Undetermined.

*Both ACE inhibitors and angiotensin II receptor blockers (ARB) are included here.

Examples of ACE inhibitor drugs include:

| | | | |
|---|---|---|---|
| Benazepril | (*Lotensin*) | Moexipril | (*Univasc*) |
| Captopril | (*Captoten*) | Perindopril | (*Aceon*) |
| Enalapril | (*Vasotec*) | Quinapril | (*Accupril*) |
| Fosinopril | (*Monopril*) | Ramipril | (*Altace*) |
| Lisinopril | (*Prinivil, Zestril*) | Trandolapril | (*Mavik*) |

Examples of angiotensin II receptor blockers include:

| | | | |
|---|---|---|---|
| Candesartin | (*Atacand*) | Losartin | (*Cozaar*) |
| Eprosartin | (*Teveten*) | Valsartan | (*Diovan*) |
| Irbesartin | (*Avapro*) | Telmisartin | (*Micardis*) |

If unsure, check with your pharmacist regarding the ACE inhibitors and angiotensin II receptor blockers used at your facility.

**ASPIRIN use:** (1) Currently uses (is prescribed) chronic aspirin, (2) Does not currently use chronic aspirin, including those who use aspirin only occasionally ("prn"), or (3) Undetermined.

**LIPID LOWERING AGENT* use:** (1) Currently uses (is prescribed) a lipid lowering agent, (2) Does not currently use a lipid lowering agent, or (3) Undetermined.

*Lipid lowering agents include:

HMG-CoA Reductase Inhibitors ("statins")

| | | | |
|---|---|---|---|
| Atorvastatin | (*Lipitor*) | Lovastatin | (*Mevacor*) |
| Cerivastatin | (*Baychol*) | Pravastatin | (*Pravachol*) |
| Fluvastatin | (*Leschol*) | Simvastatin | (*Zocor*) |

Fibric Acid Derivatives

| | | | |
|---|---|---|---|
| Fenofibrate | (*Tricor*) | Gemfibrozil | (*Lopid*) |

Bile Acid Sequestrants

| | | | |
|---|---|---|---|
| Colestipol | (*Colestid*) | Cholestyramine | (*LoCholest, Questran*) |

Nicotinic acid/niacin

If unsure, check with your pharmacist regarding the antilipemic agents used at your facility.

IMMUNIZATIONS

**FLU VACCINE past year:** (1) Yes, if administered in the past year. If the chart audit is conducted between September and December, give credit for an immunization administered during the previous flu season.

**PNEUMOVAX ever:** Self-explanatory.

**Td in past 10 years:** Self-explanatory.

TB STATUS

**TB Status (PPD):** (1) Last PPD skin test result was positive, or patient has known history of TB, (2) Last PPD was negative, (3) Refused PPD skin testing, or (4) Unknown.

**If PPD Pos, is INH Tx Complete:** (1) Yes, if the patient has documentation of at least 6 months of prophylactic INH or at least 12 months of multiple drug therapy documented for active TB, (2) No, if patient has not completed therapy. Include individuals for whom INH therapy was contraindicated. (3) Refused, if the patient declined therapy. (4) Unknown treatment status.

**If PPD Neg., Date of last negative PPD:** Self-explanatory.

ECG

**DATE OF LAST ECG:** Self-explanatory. Leave blank if no EKG recorded.

WOMEN"S HEALTH

**PAP SMEAR:** (1) Yes, Pap smear was performed during the preceding 12 months, (2) No, Pap smear not performed in the preceding 12 months (include those in whom Pap not indicated due to hysterectomy or other reason), or (3) Refused, if Pap smear offered but declined.

LABORATORY DATA

**Hemoglobin A1c:** First, record the most recent $HbA_{1c}$ value and the date it was drawn.
Then record the next most recent $HbA_{1c}$ value (Note: assure that the most recent value is listed first)

**or,** (if no $HbA_{1c}$ was done in the past 12 mo)...

**Last 3 BLOOD SUGARS:** Record the last 3 blood sugars **obtained in the past year.**
It is not necessary to record blood sugars if one or more $HbA_{1c}$ values have been recorded.

**CREATININE, CHOLESTEROL (TOTAL, HDL, LDL), TRIGLYCERIDES:** For each test, enter most recent value in past year. If the last value is more than 12 months old, do not record it.
Caution: avoid inadvertent entry of LDH value for LDL Cholesterol value.

For patients on renal dialysis, enter a creatinine value of "99.9".

**URINALYSIS in past 12 months:** Self-explanatory.

**PROTEINURIA:** (For those who had a urinalysis **obtained in the past year** only).
Most recent dipstick protein test showed: (1) 1+ (30 mg/dl) or more,
(2) No protein (or trace only).

**MICROALBUMINURIA:** (For patients without dipstick proteinuria)
A test for the presence of albumin in the urine was:
(1) Positive, microalbuminuria present, i.e., one of the following criteria is met:
- $30 mg albumin/L urine
- urine albumin/creatinine ratio $30 mg/g
- albumin excretion rate $30 mg/24hrs (>20 μg/min)

(2) Neg, test did not show microalbuminuria, or (3) Not tested or unknown.

MONITORING

**Self Monitoring of Blood Glucose** documented in chart: (1) Yes, if provider has made note of or assessed SMBG results, (2) No, if no mention of SMBG results, or (3) Refused, if SMBG has been recommended to patient, but declined.

[Optional]

**Is Patient Participating in Staged Diabetes Management?** (Only for sites that have SDM):
(1) Yes, SDM stage or phase documented at least once in the last 4 diabetes visits,
(2) No SDM documentation in the past 4 diabetes visits, or (3) Unable to determine (include pts. with no SDM documentation, but fewer than 4 diabetes visits in past 12 months).

LOCAL OPTION QUESTION

A) **LOCAL OPTION QUESTION**, if present, will be found at the end of the audit.
Read the question carefully and then select the appropriate response.
(For more information on the Local Option Question, see Section 8).

## 8. LOCAL OPTION QUESTION

Areas and facilities have the ability to formulate their own supplemental audit question, if desired. This permits each Area to analyze an additional aspect of diabetes care that may be of special interest, or to "test run" a question that might be a useful future addition to the national diabetes audit. The procedure for developing and incorporating a local option question is explained below. Although separate facilities within an Area may not necessarily be required to use the same question, it is highly recommended that this be discussed and coordinated with your Area Diabetes Consultant.

The first step is to develop a question that can be answered through a review of individual medical charts. The question can relate to demographics (Indian blood quantum, location of residence, etc), a particular aspect of care (examinations, lab studies, other medications, and so forth), co-morbid condition (history of stroke or MI, for example), a clinic related parameter (such as the number of visits in the preceding month or year), or other auditable element of interest.

The local option question needs to be posed in multiple choice format. The choices may be as simple as 'Yes' or 'No', or may have many possible answers. There can be up to 9 choices, although for ease of answering and reporting it is usually best to limit choices to no more than 4 or 5. Each choice needs to have an assigned number, just like other parts of the audit.

After the question and response choices are formulated, print or type them onto the lower righthand side of the audit form. If there is insufficient room, a separate sheet can be stapled to the audit form. Be sure to precede each choice with its associated one-digit number.

Data entry for a local option question is easy. A special “Local Option” field is provided at the very end of the audit, and is clearly identified on the data entry screen. Responses from the audit form can be entered there in the same manner as all other data is entered.

### ◆ Modifying the Report File

In order for the results of the local option question to appear in the final printed report, it must be included in the report file (AUDIT02.RPT). To do this, first assure that all the AUDIT02 files are loaded into the Epi Info subdirectory (if necessary, refer to section 9 for directions). Then use the following steps to place the local option question into the report file:

1. From Epi Info's main menu, press **<F3>** (Open). An "Edit a file" box will appear and prompt you for a **N**ame. Type **AUDIT02.RPT** <ENTER>. The AUDIT02.RPT file will appear.

2. Press the <Page Down> key 9-10 times, or use the down-arrow (9) key to get to the last part of the AUDIT02.RPT file. You will see the line *#USES LOCAL. Delete the asterisk (*) from the beginning of the line.

3. Immediately below the #USES LOCAL line, substitute your question for the sample question, being careful not to go beyond mid-page. Use multiple lines if necessary. Delete the asterisk (*) from the beginning of each line that you use.

4. Type in each of the possible responses, again substituting for the sample answers. Be sure to delete the initial asterisk (*), but only on the lines that are actually used. Lines with an initial asterisk remain "invisible" when printing the report (If you wish, any extra lines may be deleted by placing the cursor anywhere on the line and pressing **<CTRL>** - y).

5. Check the alignment of the bracketed numbers to the right of the responses. Add or delete spaces until the first brackets of the bracketed numbers line up in a vertical column.

6. Press <**F9**> to save these changes, then <**F10**> to return to the main menu.

7. The report file has now been modified to give the results of your local option question. Enter your audit data if you have not already done so (refer to section 10), "clean" your data (optional, see section 11) and then print your customized summary report(s) (sections 12 and 13).

## 9. INSTRUCTIONS FOR AUDIT02 DATA ENTRY

These instructions assume your computer uses the A: drive to receive your audit diskette, and that Epi lnfo is loaded onto hard drive C: in a subdirectory named EPI6, as this is most often the case. If this is not the case in your particular situation, you will need to modify the instructions accordingly. For example, if you are using an old computer in which the diskette goes into a B: drive, substitute "**B:**" for "**A:**" when typing the commands below.

1. Insert the AUDIT02 diskette into your A: drive. Copy all the audit files into the Epi Info program by typing: **COPY A:*.* C:\EPI6** <ENTER>

2. Start the Epi Info program in the usual way (from your computer's main menu or by going to the \EPI6 subdirectory and then typing **EPI6**).

3. If you chose not to audit one or more of the elective items, these items should be removed from the data entry screens. To do this, begin at Epi Info's main menu. Press **<F3>** (Open). An "Edit a file" box will appear and prompt you for a **N**ame. Type **AUDIT02.CHK** <ENTER>. The AUDIT02.CHK file will appear on the screen. You will notice that each of the elective items has its own HIDE line, preceded by an asterisk. Delete the asterisk from each line containing an item that you did not audit (i.e., use the arrow keys to place the cursor under the asterisk, then press the <Delete> key). When finished, press <F9> to save the changes, then <F10> to return to Epi Info's main menu.

4. When the Epi Info menu appears, select **P**rograms, then "E**N**TER data". When the program asks for the ____.REC file, type: **AUDIT02** <ENTER> followed by **1** <ENTER> and then **Y** <ENTER>. The data entry form will appear on the screen.

5. Enter your data into the program. You can set the "NumLock" button on your keyboard to "on", and enter most of the data using the keyboard pad. Note several features:

**Automatic jumps:** Where appropriate, the computer will automatically skip certain sections. For instance, it skips "Pap smear" if the patient is a male.

**Must Enter:** Certain items, such as audit date, service unit, number of active patients in the registry, and patient's sex are required by the audit program. You must enter data for these items. However, after the initial record, most of these items will be automatically entered for you, and only need to be re-entered if their value changes.

**Automatic calculations:** The program automatically calculates several items for you. For example, you can enter the height in feet and inches and the program will calculate the total height in inches. If you already have the height in inches, you may enter that under "inches". Other items automatically calculated include patient's age, duration of diabetes, BMI, mean systolic and mean diastolic blood pressure.

**Data entry messages:** The program will give you an error message if you enter a value that is outside of the expected range for that field. If your entry is clearly incorrect it may erase what you entered and require you to re-enter the value. At other times it merely asks you to double check to be sure that your entry was what you intended.

6. MAKE A BACKUP COPY OF YOUR DATA!!! It's a good idea to make a backup copy of your audit file **EVERY TIME** you finish entering data. This can save you considerable time and grief if something should happen to your original data. You can easily make a backup by copying your data back onto the same diskette that contained the original AUDIT02 programs. To do this, exit the Epi Info program, get to any DOS prompt (such as **C:\>**) and type the following command:

**COPY C:\EPI6\AUDIT02.REC A:\<filename>.REC** <ENTER>

You can name <filename> anything you wish (up to 8 characters). If you call it "AUDIT02.REC", the program will write your data over the empty data file on the diskette, which is fine.

## 11. "CLEANING" YOUR DATA

An optional program, CLEAN02, is available if you wish to scan your data for possible inadvertent data entry errors. The main AUDIT02 program is designed to identify and permit correction of many errors at the time of data entry, but nevertheless some may occur. The CLEAN02 program creates a number of error-checking tables or lists. It begins by producing frequency tables on items that should have only a single answer per facility (such as the number of active patients on the diabetes registry, the name of the facility, or the codes for the Area and Service Unit). It also produces a listing by chart number of records having values that are atypical or outside of the usual range for a given item. These listings may or may not represent actual errors, but may be reviewed for accuracy.

To "clean" your data, go to Epi Info's main menu and select **A**NALYSIS from the listing of **P**rograms. Put your data file into the **A**NALYSIS program by typing at the EPI> prompt:

**READ AUDIT02.REC** <ENTER>

Next, turn on your printer, then press the <**F5**> key to send output to the printer [Note: you can skip this step if you wish and have the results appear only on screen, although most people find it easier to have a printout in hand].

Now, type at the EPI> prompt: **RUN CLEAN02** <ENTER>

## 12. PRINTING A SUMMARY REPORT

You will probably want to print a report after entering and (optionally) cleaning your data.
[Note: Before printing, if you entered data on a Local Option Question, you should first modify the AUDIT02.RPT file so that the results of your question appear on the report -- see bottom of pg 13].

To print a report, go to Epi Info's main menu and select **A**NALYSIS from the listing of **P**rograms. Put your data file into the **A**NALYSIS program by typing:

**READ AUDIT02.REC** <ENTER>

Next turn on your printer, then press the **<F5>** key. A message should appear that says "ROUTE PRINTER", meaning that the output from the **A**NALYSIS program will be sent to your printer (if you wish to have the output appear only on your computer screen, skip this step).
Finally, type:

**RUN AUDIT02.PGM** <ENTER>

The computer will immediately begin to analyze your data, and will then print the report (or simply display it on your screen, if you did not push **<F5>**).

## 13. THE RENAL PRESERVATION REPORT

A supplemental audit report, referred to as the Renal Preservation Report, is available to you.
It provides more detail regarding diabetic kidney disease screening and treatment efforts at your facility.
To print the Renal Preservation Report, go back to Epi Info's main menu and then select **A**NALYSIS from the list of **P**rograms. (It is important to do this, even if you were already in **A**NALYSIS, as it "resets" certain variables).

At the EPI> prompt, type: **READ AUDIT02** <ENTER>

Press **<F5>** if you wish the output to go to the printer, or skip this step if you want it to go to your computer screen only.

At the next EPI> prompt, type: **RUN RENAL02** <ENTER>

The Renal Preservation Report will now be printed (or will appear only on your screen, if you did not push **<F5>**).

There are 2 graphs associated with the Renal Preservation Report, one displaying distribution of mean arterial pressure for the audited sample, and the displaying mean diastolic pressure. Depending upon the graphics drivers available to you, it may or may not be possible to print the graphs or display them on your computer monitor.

## 14. THE CARDIOVASCULAR DISEASE REPORT

An additional audit report, the Cardiovascular Disease (CVD) Report, is available to you for printing. It provides more detail regarding cardiovascular risk factors in males and females above and below the age of 40.

To print the CVD Report, go back to Epi Info's main menu and then select **A**NALYSIS from the list of **P**rograms. (It is important to do this, even if you were already in **A**NALYSIS, as it "resets" certain variables).

At the EPI> prompt, type: **READ AUDIT02** <ENTER>

Press **<F5>** if you wish the output to go to the printer, or skip this step if you want it to go to your computer screen only.

At the next EPI> prompt, type: **RUN CVD02** <ENTER>

The CVD Report will now be printed (or will appear only on your screen, if you did not push **<F5>**).

# ASSESSMENT OF DIABETES CARE, FY 2002

AUDIT DATE (mm/dd/yyyy): ____/____/_____ FACILITY NAME: _____

AREA: ___ SERVICE UNIT: ___ FACILITY: ___ # OF PTS IN REGISTRY: _____ TRIBAL AFFIL: _____

COMMUNITY:_____ REVIEWER: ____ CHART NUMBER: _____ DATE OF BIRTH: ____/____/_____

SEX: ☐1 Male ☐2 Female

DATE of Diabetes Diagnosis:
____/____/_____

DIABETES TYPE: ☐1 Type 1
☐2 Type 2

TOBACCO USE:
☐1 Current User
☐2 Not a Current User
☐3 Not Documented

→ Referred for (or provided) cessation counseling?
☐1 Yes
☐2 No
☐3 Refused

**Vital Statistics**

HEIGHT: ____ft ____ in

Last WEIGHT: _____ lbs.

HTN (documented Dx or Rx):
☐1 Yes
☐2 No

Last 3 BLOOD PRESSURES:
_____/_____ mm Hg
_____/_____ mm Hg
_____/_____ mm Hg

**Examinations (in past year)**

FOOT EXAM - complete:
☐1 Yes ☐3 Refused
☐2 No

EYE EXAM (dilated/fundus):
☐1 Yes ☐3 Refused
☐2 No

DENTAL EXAM:
☐1 Yes ☐3 Refused
☐2 No

**Education (in past year)**

DIET INSTRUCTION:
☐1 RD
☐2 Other
☐3 Both
☐4 None ☐5 Refused

EXERCISE INSTRUCTION:
☐1 Yes ☐3 Refused
☐2 No

DM Education (Other)
☐1 Yes ☐3 Refused
☐2 No

**DM Therapy**

Select **all** that currently apply:

☐1 Diet & Exercise Alone
☐2 Insulin
☐3 Sulfonylurea (tolbutamide, chlorpropamide, glyburide, glipizide, [repaglinide, neteglinide], others)
☐4 Metformin (Glucophage®)
☐5 Acarbose (Precose®) or miglitol (Glyset®)
☐6 Glitazone (Actos®, Avandia®)
☐9 Unknown/Refused

**ACE Inhibitor/ARB Use**
☐1 Yes ☐3 Unknown
☐2 No

**Chronic Aspirin Therapy**
☐1 Yes ☐3 Unknown
☐2 No

**Lipid Lowering Agent**
☐1 Yes ☐3 Unknown
☐2 No

**Immunizations**

FLU VACCINE (past year):
☐1 Yes ☐3 Refused
☐2 No

PNEUMOVAX ever:
☐1 Yes ☐3 Refused
☐2 No

Td in past 10 years:
☐1 Yes ☐3 Refused
☐2 No

TB Status (PPD):
☐1 Pos ☐3 Refused
☐2 Neg ☐4 Unknown

→ If PPD **Pos**, INH Tx Complete:
☐1 Yes ☐3 Refused
☐2 No ☐4Unknown

→ If PPD **Neg**, Last PPD:
Date: ___/___/_____

Date of last EKG:___/___/_____

(Females only)
Pap Smear in past 12 months:
☐1 Yes ☐3 Refused
☐2 No

**Laboratory Data**

HbA1c (most recent): _____.___ %

Date obtained: ____/____/_____

HbA1c (next most recent): ____.___%

or, if no HbA1c available...
Last 3 BLOOD SUGARS:
_____ mg/dl
_____ mg/dl
_____ mg/dl

Most recent serum value **in the past 12 months:**

Creatinine: ____.__ mg/dl

Total Cholesterol: _____ mg/dl

HDL Cholesterol: _____ mg/dl

LDL Cholesterol: _____ mg/dl

Triglycerides: _____ mg/dl

URINALYSIS:
☐1 Yes ☐3 Refused
☐2 No

→ PROTEINURIA:
☐1 Yes (1+ or more)
☐2 No (Neg or trace)

→ MICROALBUMINURIA:
☐1 Pos
☐2 Neg
☐3 Not tested

Is self monitoring of blood glucose documented in chart?
☐1 Yes
☐2 No
☐3 Pt refuses to monitor

Is pt participating in SDM?
☐1 Yes
☐2 No
☐3 Unable to determine

**Local Option question:**

# IHS Standards of Care for Patients with Type 2 Diabetes

**April, 2001**

The Standards of Care for Type 2 diabetes have been developed and updated by the IHS National Diabetes Program to help provide consistent, quality care to patients with diabetes.

## 1. Baseline Studies

**Height**- Measure once and record on PCC Health Summary. If PCC is not available, record on diabetes flowsheet. For children <18 years of age, height and weight should be recorded at each visit. Use to calculate body mass index and ideal or reasonable body weight.

**Date of Diabetes Diagnosis** - Record on PCC Health Summary. If PCC is not available, record on diabetes flowsheet. Longer duration of diabetes correlates with increased risk of complications.

**ECG** - Obtain baseline then repeat every 1-5 years as clinically indicated (for those age 40 and above, or with diabetes duration over 10 years, every 1-2 years is recommended).

**PPD -** Should be documented once after diagnosis of diabetes (Offer INH prophylaxis to patients according to protocol – refer to Section 9).

## 2. Each Clinic Visit

**Blood Pressure -** Target BP is $\leq$ 130/80. Additional protection against complications, including renal failure, may be obtained by lowering BP further.

**Weight** - Compare with measurements from prior visits to identify trends.

**Blood Glucose** - Results of lab determinations and self-monitoring should be available for timely discussion with the patient. Hemoglobin A1c (HbA1c) at 3-4 month intervals.

- Fasting/casual glucose measurement and self-monitoring records should be available for timely discussion with the patient at each visit. Self-monitoring BG records are vital to diabetes management decisions.
- Determine if **HbA1c** has been performed within the past 3-4 months, and order if due. Patients in acceptable glycemic control (HbA1c < 7.0%) should be tested at least every 6 months. HbA1c estimates the average degree of glycemic control over the preceding 3 months. HbA1c is the standard way to measure glycemic control.
- HbA1c results should be discussed with the patient at the time of the patient visit. If in-house measurement is unavailable, blood sample should be obtained several days before the clinic visit.

At each clinic visit, the appropriate education, intervention, referral, and or follow-up will be provided as indicated.

**Foot Check** - Inspection of feet and nails. Check for ingrown toenails, calluses, deformities, pressure points, ulcers, and cellulitis.

## 3. Annual

**Creatinine -** Screen for renal insufficiency.

**Complete UA/Microalbuminuria** - A test for urine protein should be performed yearly. If negative, a screening test for microalbuminuria should be performed (by A/C ratio or dipstick test). Dipstick-positive microalbuminuria should be confirmed on a separate specimen using an A/C ratio (abnormal $\geq$30mg/gm) or 24 hour urine.

ACE inhibitors should be considered in patients with microalbuminuria or proteinuria, even if normotensive.

**Lipid Profile**
Risk factors for atherosclerosis include LDL >100, HDL <40 in men and <45 in women, and TG >200. Even lower LDL and TG values represent increased risk in persons with previously documented atherosclerosis. These risk factors, especially elevated LDL, should be treated aggressively. Caution should be used when considering agents that aggravate hyperglycemia.

A lipid panel should be performed annually (TC, LDL, HDL, TG). Consider direct LDL measurements, especially if TG >250 or if the specimen is to be obtained non-fasting. Elevated TC, LDL, TG and low HDL confer greater risk for atherosclerosis. Optimal LDL cholesterol levels for adults with diabetes are <100. All patients with LDL >100 require medical nutrition therapy and other lifestyle modifications. Pharmacologic intervention is recommended if dietary interventions and lifestyle modifications are ineffective in lowering LDL to <100.

**Aspirin Therapy** - Aspirin has been used as a primary and secondary prevention strategy to prevent cardiovascular events. Men and women with diabetes have a 2-4 fold increase in risk of dying from complications of cardiovascular disease (CVD). Aspirin in doses of 162-325 mg/day is recommended for patients with diabetes.

Strongly consider aspirin therapy as a primary prevention strategy in high risk men and women age 30 and above with diabetes. This includes individuals with family history of CVD, cigarette smoking, hypertension, obesity, albuminuria and dyslipidemia.

Use aspirin therapy as a secondary prevention strategy in diabetic men and women who have evidence of large vessel disease, such as history of MI, stroke, peripheral vascular disease, claudication or angina.

**Eye Exam -** Retinal exam through dilated pupils or fundus photo. Individuals with type 1 diabetes should receive an initial exam within 3-5 years of diagnosis once they are $\geq$ 10 years of age. People with type 2 diabetes should receive an initial exam at diagnosis and yearly thereafter.

**Dental Exam -** Annual screen for periodontal disease and other oral pathology.

**Foot Exam -** Risk assessment to include pulse check and sensory evaluation with monofilament, identification of foot deformity, and documentation of history of foot ulcers.

**Screen for Neuropathy** - By history and physical; include sensory, motor and autonomic evaluation.

## 4. Immunizations and Skin Tests

**Flu Vaccine -** Yearly

**Pneumovax** - Vaccinate everyone at the time of diagnosis. Revaccination should be strongly considered five (5) years after the first dose for those patients at highest risk of fatal pneumococcal infection (e.g., asplenic patients) or those at highest risk of rapid decline in antibody levels (e.g., those with chronic renal failure, nephrotic syndrome, or transplanted organs). Revaccinate all patients $\geq$ age 65 years if it has been >5 years since initial vaccination.

**Td** - Every 10 years.

**Hepatitis B** - Vaccinate persons whose renal disease is likely to lead to dialysis or transplantation (serum creatinine $\geq$ 2.0).

**PPD** - Once after diagnosis unless known positive. PPD-positive people with diabetes, including AI/AN with Type 2 diabetes, have 5 times the risk of reactivating TB. All diabetic patients with positive PPD including those over age 35 should be given INH chemoprophylaxis according to current guidelines (see Section 9).

## 5. Special Aspects of Diabetes Care

**Lab Tests** - C-peptide, the other half of pro-insulin, can evaluate a patient's endogenous insulin secretion and help distinguish between Type 1 and Type 2 diabetes. The test can be useful in at least two clinical situations:

1. Solving a clinical problem about using oral agents vs. insulin.
2. Evaluating a patient with history of ketoacidosis when stable (useful in setting of ETOH, acidosis, and diabetes to determine ongoing need for insulin).

## 6. Self-Care Education - Use of the PCC education codes to document education is encouraged.

**Nutrition Education** - Meal planning, nutrition education, and exercise are the primary treatment strategies for Type 2 diabetes. The Indian Health Service Diabetes Program supports the American Diabetes Association position that all persons with diabetes receive regular nutrition counseling and are seen by an RD/nutritionist every six months to 1 year. Some people may require more frequent evaluation and counseling.

**Diabetes Education** - All patients with diabetes and their families should have diabetes self-care information. The National Standards for Diabetes Care and Patient Education provide guidelines for education program development with criteria specific for AI/AN health care facilities. Every facility should work towards providing systematic mechanisms to make culturally relevant self-care information available for patients.

**Exercise Education** - Exercise is associated with improvement in both short- and long-term metabolic control. Exercise counseling should be provided to all persons with diabetes. The appropriate type of activity, including frequency, duration, and intensity, should be individualized for each patient.

**Education and Glycemic Control**

- Self monitoring results should be discussed with the patient at each visit.
- HbA1c results should be discussed with the patient within 2 weeks of the test, preferably at the patient visit.

**Self-Blood Glucose Monitoring (SBGM)** - The purpose of SBGM is to determine the pattern of blood glucose throughout the day. This pattern provides information for selection and adjustments in therapy. Frequency of monitoring must be individualized and may vary as day-to-day circumstances require.

## 7. Routine Health Maintenance

**Physical Exam**
Complete exam as baseline, then routine.

**Pap Smear/Pelvic Exam**
Yearly

**Breast Exam**
Yearly

**Mammogram**
Every 1-2 years in women ages 40-49, yearly thereafter.

**Rectal Exam/Stool Guaiac**
Yearly in adults $\geq$ 40 years of age.

**Tobacco Use**
Current tobacco use should be documented and a referral made for cessation of tobacco use.

## 8. Pregnancy and Diabetes

All women who are in their childbearing years should receive pre-pregnancy counseling for optimizing metabolic control prior to conception. Counseling for family planning is essential to achieve this goal.

American Indian women are at increased risk for developing gestational diabetes (GDM), as are women with certain other risk factors, including but not limited to the following:

- previous gestational diabetes
- previous fetal macrosomia
- unexplained stillbirth
- congenital anomaly
- obesity
- insulin resistance syndrome
- polycystic ovarian syndrome (PCOS)
- family history of diabetes

These women should be screened for GDM early in pregnancy. If early screening is negative, the screen should be repeated at 24-28 weeks gestation.

Women with GDM are at increased risk of developing type 2 diabetes (about one third of all AI/AN women with GDM will develop diabetes within 5 years). These women should be re-tested by OGTT at least 6-12 weeks post delivery to determine their glycemic status. Women with a normal postpartum OGTT should be re-tested every 1-3 years. Bear in mind that diagnostic standards for diabetes in breastfeeding women have not been established. Blood glucose should be monitored in the postpartum and lactating period, including regular self blood glucose testing, as clinically appropriate.

All women with a history of GDM should receive counseling/education regarding lifestyle modifications that will reduce or delay the development of type 2 diabetes. Moreover, the importance of maintaining optimal glucose control prior to and during any subsequent pregnancy should be stressed. Mothers should be made aware that children of GDM pregnancies should be monitored for obesity and abnormalities of glucose utilization.

Further recommendations and guidelines for the screening, diagnosis and treatment of GDM may be found in the most recent *Clinical Practice Recommendations* of the American Diabetes Association (published annually), *Management of Diabetes in Pregnancy*, 3rd Edition (ADA), 2000, and Metzger BE, Coustan DR (Eds.): Proceedings of the Fourth International Workshop-Conference on Gestational Diabetes Mellitus. Diabetes Care 21 (Suppl. 2): B1-B167, 1998

## 9. Tuberculosis and Diabetes Patients*

A "positive" PPD skin test (i.e., $\geq$10 mm induration 48-72 hours after administration) means that a person either has latent tuberculosis infection (LTBI) or active tuberculosis (TB) disease. Active TB disease needs to be ruled out prior to starting patients with LTBI on treatment. Treatment for active TB and LTBI are different*.

Patients with diabetes and LTBI are at high risk of progressing to active TB, if they are not treated for LTBI. Studies have shown that the risk is 2 to 6 times greater than in patients without diabetes. Other factors that further increase the risk for TB include: recent PPD conversion within 2 years, intravenous drug use, chest film showing prior active disease that was never treated, immunosuppressive drugs, and ESRD. Cutaneous anergy increases as patients age and develop complications of diabetes such as ESRD. Anergy may lead to false negative PPD test results.

In most cases progression of LTBI to active TB can be prevented by treatment with INH. In general, patients with diabetes who have a positive PPD (accurately read by a provider trained in interpretation of PPD) should receive treatment for LTBI, *except* in the following circumstances:

- severe liver disease
- suicidal ideation
- adverse reaction to INH.

Patients receiving treatment for LTBI should be followed and monitored for potential hepatotoxicity. While national recommendations emphasize monitoring hepatotoxicity through systematic repetitive patient education and clinical evaluation for signs and symptoms of hepatotoxicity, baseline measurement of liver function tests and after one month should be

*Recommendations for targeted tuberculin testing and treatment of LTBI in MMWR, June 09, 2000/ 49(RR06); 1-54 or at www.cdc.gov/mmwr//indrr_2000.html Or at: Treatment for active TB disease is detailed in: CDC Core Curriculum in TB: What the Clinician Should Know. CDC, 2000 (4th edition).

considered, especially in patients receiving other potentially heptotoxic medications. Some experts recommend that INH be discontinued if transaminase levels exceed three times the upper limit of normal when associated with symptoms or five times the upper limit of normal if the patient is asymptomatic.

## IHS TB Protocol for Patients with Diabetes:

- Check the PPD status of all patients with diabetes.
- If the PPD status is negative or unknown:
  - PPD testing should be done within one year of initial work up for diabetes diagnoses, and treated if they have LTBI.
  - If no PPD has been *placed* since the diagnosis of diabetes, and the patient's PPD status is negative or unknown, a PPD status needs to be ascertained.
  - Subsequent PPD testing is done only if there is contact with an active TB case.
- If the PPD status is positive:
  - Check for completion of past treatment for active TB or LTBI (6-9 months of INH for LTBI or multiple drug therapy for active disease).
  - If the patient has not been adequately treated, search for active disease by history (weight loss, etc), fever (record temperature) and recent chest x-ray (within 6 months). If there is no evidence of active disease, recommend treatment for LTBI (9 mos. of INH 300 mg daily) to all patients with diabetes, regardless of age, unless the patient has liver disease, suicide ideation or a previous adverse reaction to INH. Patients with diabetes should be given pyridoxine (10-50 mg/day) with their INH. Consider directly observed therapy of LTBI when possible, especially for patients on dialysis.

# Technical Notes
# IHS Diabetes Care and Outcomes Audit
# FY2002

This document is intended to accompany the 2002 audit summary report. The report contains data on diabetes-related care, and the health status of American Indians and Alaska Natives with diabetes who receive care from IHS, Tribal or Urban health facilities. The data is obtained from an annual chart audit conducted under the auspices of the IHS Diabetes Program. A random sample is drawn from the health facility's list of active diabetic patients in sufficient number to provide an estimate " 10% of the true rate. Summary reports from each Area and for all IHS Areas are weighted by the size of the diabetic population of the health facility or Area, respectively.

The percentages reported represent either the proportion of the sample population having a particular attribute, in the case of demographic data, or the percentage in compliance with a specific standard of care*. The reported rates are calculated using the total audit sample as the denominator for each of the standards, with the following exceptions:

| **Standard or Test** | **Denominator** |
|---|---|
| Tobacco cessation counseling | All current tobacco users. |
| Chronic aspirin use | All individuals age ≥ 30. |
| ECG | All individuals age ≥ 30. |
| Pap smear | All females age ≥18. |
| Creatinine ≥ 2.0 | All individuals who had creatinine tested in the past year. |
| Microalbuminuria | All individuals who had a urinalysis in the past year **and** no proteinuria by standard dipstick. |

**Definitions**

Eye Exam: A dilated fundoscopic exam conducted by a primary care provider, optometrist or ophthalmologist, or a dilated fundoscopic photograph.

Foot Exam: An examination of the feet that includes neurologic and vascular evaluation as well as visual inspection for deformities or lesions.

Dental Exam: The dental examination is one that includes evaluation of the teeth (if present), gingiva and mucosal surfaces.

*IHS Standards of Care for Patients with Type 2 Diabetes, April 2001

Glycemic Control: Based on last HbA1c level, if one was recorded in the past year. If no HbA1c was recorded, then based on the average of the last 3 blood glucoses drawn within the past year. For records without an HbA1c value, the mean blood glucose is converted to the analogous HbA1c level, using the formula:

$$\text{HbA1c} = \frac{\text{Mean BS} + 60.16}{30.9}$$

Be aware that in the audit reports from 1998 and earlier, mean blood glucose values were not converted to HbA1c values. Instead, glycemic control categories included separtate HbA1c and blood glucose ranges, as shown in Table 1.

**Table 1** Glycemic Control Categories ("Old" Format)

| Control level | HbA1c | Mean BG |
|---|---|---|
| Acceptable | #7.5#165 | |
| Fair | 7.6 -10.0 | 166-250 |
| High | 10.1-12.0 | 251-340 |
| Very high | >12.0 | >340 |

Blood Pressure Control: Based on the mean of the last 3 blood pressure determinations taken within the preceding 12 months. Under the new format, there are 5 BP categories, ranging from <120/<70 to 160/95 or higher.

PPD Status: A negative PPD is considered current if it was placed after the date of diabetes diagnosis. INH treatment is noted only if the treatment course was completed.

Proteinuria: Considered to be present if the most recent urine dipstick test in the past year showed 1+ (30 mg/dl) or more protein. Because the color difference between a "Negative" and a "Trace" reading can be subtle and misread, a Trace reading is not sufficient to constitute proteinuria for audit purposes.

Microalbuminuria: Considered to be present if the urine specimen is without gross proteinuria (as defined above) and meets one of the following criteria:

- urine albumin/creatinine (A/C) ratio is $30 mg/gm.
- urine albumin excretion rate (AER) >20 Fg/min, or ≥30 mg/24hrs.
- ≥30 mg albumin/L of urine.

Self Monitoring of Blood Glucose documented: Considered to be present if a provider made note of or assessed SMBG results at least once in the last 4 diabetes visits.

considered, especially in patients receiving other potentially heptotoxic medications. Some experts recommend that INH be discontinued if transaminase levels exceed three times the upper limit of normal when associated with symptoms or five times the upper limit of normal if the patient is asymptomatic.

## IHS TB Protocol for Patients with Diabetes:

- Check the PPD status of all patients with diabetes.
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  - Subsequent PPD testing is done only if there is contact with an active TB case.
- If the PPD status is positive:
  - Check for completion of past treatment for active TB or LTBI (6-9 months of INH for LTBI or multiple drug therapy for active disease).
  - If the patient has not been adequately treated, search for active disease by history (weight loss, etc), fever (record temperature) and recent chest x-ray (within 6 months). If there is no evidence of active disease, recommend treatment for LTBI (9 mos. of INH 300 mg daily) to all patients with diabetes, regardless of age, unless the patient has liver disease, suicide ideation or a previous adverse reaction to INH. Patients with diabetes should be given pyridoxine (10-50 mg/day) with their INH. Consider directly observed therapy of LTBI when possible, especially for patients on dialysis.

# UPGRADING EPI INFO

Epi Info is the CDC software package that is used to enter audit data and obtain audit reports. It is now available in both DOS and Windows versions. For the current (FY 2002) audit, the DOS version will be used. It is anticipated that the Windows version, known as Epi Info 2000, will be used for the FY2003 audit and all subsequent audits.

Epi Info versions 6.04c and 6.04d are the most recent DOS versions of Epi Info. Both are capable of correctly handling dates with 4 digit years, whereas 6.04b and earlier versions are not. *The AUDIT02 programs use dates with 4-digit years and will run properly only on the two most recent DOS versions of Epi Info.*

Confirm whether you have a recent version of Epi Info. This is easily done by looking at Epi's main menu page. The version number is located immediately below the large blue "Epi Info 6". If it says "Version 6.04b to c Upgrade" or "Version 6.04d", you are all set: you have a recent version. If not, you will need to upgrade.

**To upgrade to Epi Info 6.04d**

1. Create a temporary subdirectory (for example, C:\EPITEMP).

2. Go to CDC's Epi Info website (www.cdc.gov/epiinfo/)

3. Select "Download Epi Info 6".

4. Download the following 3 compressed files into the temporary subdirectory:
   EPI604_1.EXE
   EPI604_2.EXE
   EPI604_3.EXE

5. Execute each of the 3 files, then run Install.exe.

6. Follow and respond to the Epi Info installation questions and prompts.

   If you do not have internet access, or have questions on the procedure described above contact gloria Lucero at IHS National Diabetes Program Office (505) 248-4182.